

## DILUTED YOGURT (AYRAN) VERSUS WATER IN DISSOLVING ORAL REHYDRATION SALTS\*

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Oral rehydration salts of the World Health Organization (WHO) are still the first choice in the treatment of acute diarrhea, despite the fact that different formulae<sup>1-4</sup> and routes of administration<sup>5</sup> have been proposed. However, in practice the refusal of WHO's oral rehydration solution by some children has been a matter of concern. Once this solution is refused by a patient, either a change in the route of administration (e.g., gavage or I.V. line), replacement using another formula or a change in palatability is essential. Ayran is a traditional Turkish beverage which is prepared by diluting yogurt in varying amounts of water. In rural Turkey, salty ayran has been used extensively in the treatment of diarrhea. Keeping the electrolyte composition of the final solution at optimum (90 mEq/l), an oral rehydration solution prepared in ayran (ORSA) was found more acceptable than an oral rehydration solution prepared in water (ORSW). In addition, ayran may be used as an "early food" for dehydrated children because it contains protein and a minimal amount of fat.

### Material and Methods

This study was carried out on 156 children with diarrhea at Tepecik Social Security Hospital, İzmir, between March, 1986 and January, 1987. Patients between three and 12 months of age were put into group A while those between 12 and 48 months of age were assigned to group B. Each group was subsequently subgrouped with regard to the solution offered (ORSA or ORSW). The degree of dehydration was assessed as: mild, moderate or severe according to physical signs<sup>6</sup>. In this study, we included only cases which were of a mild to moderate degree of dehydration.

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Routine laboratory tests (complete blood count, stool microscopy and culture, blood urea nitrogen, serum creatinine and electrolytes) were performed on all patients at admission and 24 hours after therapy.

Low-fat cow's yogurt was diluted in five parts water to obtain ayran. The electrolyte, carbohydrate, protein and fat content of ayran is shown in Table I. The electrolyte composition of the final ayran-based oral rehydration solution was about 85 to 92 mEq/lt.

Of the 76 patients who constituted group A, 36 were administered ORSA while 40 were given ORSW. In group B, of the 80 patients, 40 were given ORSA while the remaining 40 were administered ORSW. Throughout the course of treatment, solutions were given on demand and children who refused one solution were given the other.

TABLE I: Electrolyte, Protein and Fat Content of Ayran

Sodium	8-10 mEq/lt
Potassium	9-11 mEq/lt
Protein	1.5-2.2 g/dl
Fat	0.5-0.6 g/dl
Carbohydrate	1.1-1.5 g/dl

## Results

In group A, 34 out of 40 infants on ORSW (85%) and 32 out of 36 infants on ORSA (89%) accepted and tolerated the solutions well (Table II). Infants refusing one solution also refused the other, with one exception. In group B, 28 out of 40 children on ORSW (70%) accepted the solution whereas 37 out of 40 children (92.5%) on ORSA accepted the ayran-based solution. The difference between the two subgroups was significant ( $p < 0.05$ ). In this group, 11 out of 12 patients who

TABLE II: Distribution of Patients in Groups

Age	3 - 12 Months		12 - 48 Months	
	ORSW** (n: 40)	ORSA* (n: 36)	ORSW (n: 40)	ORSA (n: 36)
Accepted	34	32	28	37
Refused	6	4	12	3

- \* ORSA : oral rehydration salt dissolved in ayran
- \*\* ORSW: oral rehydration salt dissolved in water

refused ORSW and one out of three patients who refused ORSA accepted the alternative solution.

At the beginning of the therapy sodium and potassium serum levels were slightly decreased in patients with gastroenteritis. If either solution was used, recovery was complete and within twenty-four hours there was a gain in weight.

## Discussion

Refusal of WHO's oral electrolyte solution by some dehydrated children has been a matter of concern in combatting diarrhea. We used ayran instead of water to dissolve the oral rehydration salts and from the acceptability point of view, ORSA was found to be superior to ORSW. However, both treatments, when accepted, provided satisfactory clinical and biochemical healing.

Early feeding is one of the important steps in the treatment of children with gastroenteritis. Ayran is a valuable early food for children with diarrhea because it contains protein, carbohydrates and a minimal amount of fat.

## Summary

Seventy-six children with gastroenteritis were treated with oral rehydration salts dissolved in ayran (diluted yogurt), and eighty patients were treated with oral rehydration salts dissolved in water. The patients whose ages ranged between three and twelve months accepted both solutions equally. However, the acceptance of the ayran-based solution was significantly greater than WHO's salt solution in the patients whose ages ranged between one and four years. It is proposed that ayran be used to dissolve oral rehydration salts in the treatment of diarrhea since it is more palatable and easily acceptable by children.

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